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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/854,712

05/14/2001

Yu-Chun Chow

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(PECA35502/1680)

7590

10/19/2004

EXAMINER

DAVIS, CYNTHIA L

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ART UNIT

PAPER NUMBER

2665

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,712

Applicant(s)

CHOW, YU-CHUN

Examiner

Cynthia L Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim purports to depend from itself, which is improper.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 recites the limitation "said buffer stack" in line 10. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(a) as being clearly anticipated by the prior art as admitted in the instant application.

Regarding claim 1, a control signal system in a switch including N ports and a buffer for registering data packets with an empty buffer counter for counting how much space in said buffer remains available is disclosed in the instant application, figure 1, element 10. N port-packet-counters for respectively counting how many said data packets in said buffer are intended to be respectively sent to specific ones of N said ports is disclosed in the instant application, figure 1, the element named "Port N packet counter".

5. Claims 12, 13, 17-24, and 29-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Erimli.

Regarding claim 12, sending said data packet to be sent to a specific one of said ports and stored into said buffer of said switch is disclosed in Erimli, figure 4, element 412. Initiating and controlling a flux of said data packets to be sent to said specific port is disclosed in column 12, lines 34-37 (the pause register is the flow control). Causing said switch into an alarm state when said specific port will be overfilled with packets is disclosed in column 12, lines 1-7 (when the threshold is exceeded, data loss will occur unless flow control is performed; the alarm state triggers the flow control). Finding another data packet from another port of said N ports to be sent to said specific port and triggering a triggering message to stop said another port from sending any data packet to said specific port is disclosed in column 15, lines 46-50 (sometimes the pause frame is only sent to ports where packets going to the congested output port are located).

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Going back to step (a) after the alarm state corresponding to the specific port is removed and repeating the steps to process said data packets to be sent to said specific port until all data packets in the switch have been processed is disclosed in column 14, lines 61-62 (the output ports are monitored continuously for alarm states).

Regarding claim 13, sending a data packet from a network is disclosed in column 4, lines 12-15 (the invention is a switch in a packet-switched network).

Regarding claim 17, the alarm state being cause by an alarm device which comprises N alarm units for respectively alarming that a specific port is overfilled is disclosed in column 12, lines 15-17 and 57-60 (once the threshold level for a specific port is reached, there is a device that sends an alarm to the pause cell generator).

Regarding claim 18, one of the N alarm units alarming that a specific port will be overfilled is disclosed in column 12, lines 15-17 and 57-60 (once max entries is reached, the pause frame is generated—this equates an alarm state).

Regarding claim 19, the said N alarm units comprising N comparators for triggering said triggering message and N signal generators triggered by the N comparators is disclosed in column 12, lines 15-17 (each port can have different threshold values, implying that each port has a separate comparator) and column 12, lines 57-60 (each comparator would generate a signal to indicate that a pause frame should be generated). Sending flow control signals to all N said ports except said specific port is disclosed in column 15, lines 47-51.

Regarding claim 20, the triggering message being to stop any source end in a different network connected with said switch from transmitting data packets into said switch is disclosed in column 11, lines 61-63.

Regarding claim 21, examining said N ports except for said specific port to see whether there is another data packet to be sent to said specific port is disclosed in column 15, lines 47-51 (the pause frame is sent to the upstream ports that have data packets to send to the specific port).

Regarding claim 22, sending and storing said another data packet into said buffer is disclosed in column 15, lines 61-62 (the current frame is transmitted, received, and stored in the queue).

Regarding claim 23, storing means for receiving data packets from a network to be sent to a specific port and storing in said buffer is disclosed in figure 4, element 412. Computing means for counting a flux of said data packet to be sent to said specific port is disclosed in column 12, lines 15-17. Alarming means for causing an alarming state for preventing said specific port from being overfilled with data packets is disclosed in column 12, lines 15-17 and 57-60 (when the threshold is reached, an alarm state is achieved and the pause frame is generated). Triggering means for triggering a message to stop any data packet to be sent to said specific port from being transmitted into said switch is disclosed in column 12, lines 57-60 (the pause frame is triggered). Processing means for processing said data packets transmitted to said specific port until all data packets in said switch have been processed is disclosed in column 14,

lines 61-62 (the output ports are monitored continuously for alarm states while the packets flow through the switch).

Regarding claim 24, N alarm units for alarming the switch from being overfilled with data packets to be sent to said N ports is disclosed in 12, lines 15-17 and 57-60 (when the threshold is reached, an alarm state generates the pause frame).

Regarding claim 29, said message in said triggering means being triggered by another data packet come from a second port in said switch to be sent to said specific port is disclosed in column 15, lines 51-52 (the pause frame could be sent only to stations currently transmitting to the alarming port).

Regarding claim 30, the message being sent by one of the comparators in the system corresponding to said second port is disclosed in column 15, lines 37-39.

Regarding claim 31, the message being sent to a signal generator corresponding to one of said comparators is disclosed in column 15, lines 32-36.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the instant application in view of Joung.

Regarding claim 2, the buffer stack being a buffer stack comprising a plurality of buffer units is missing from the prior art. It is disclosed in Joung, column 6, lines 28-29

(the logical queues for each port are the plurality of buffer units). It would have been obvious to one skilled in the art at the time of the invention to have the buffer stack comprise a plurality of buffer units. The motivation would be to have the buffer divided up among the ports.

Regarding claim 3, each buffer unit receiving and storing a data packet sent from a network to be sent to a specific port in said switch is missing from the prior art. It is disclosed in Joung, column 6, lines 25-29. It would have been obvious to one skilled in the art at the time of the invention to receive and store data packets destined for specific ports. The motivation would be to keep the packets until there is bandwidth available for them to be output.

Regarding claim 4, a flow control signal system for controlling a flux of said data packet to be sent to said specific port is missing from the prior art. It is disclosed in Joung, column 6, lines 44-47. It would have been obvious to one skilled in the art at the time of the invention to control the flux of the data. The motivation would be to avoid congestion.

Regarding claim 5, the flow control system further comprising an alarming device for alarming that said N ports have reached a threshold state is missing from the prior art. It is disclosed in column 6, lines 44-47 (the alarm state is when the flow control is performed). It would have been obvious to one skilled in the art at the time of the invention to have an alarming device. The motivation would be to have a device to indicate when flow control is necessary.

Regarding claim 6, the alarming device including N alarm units for respectively alarming that said N ports have reached threshold states is missing from the prior art. It is disclosed in Joung, column 6, lines 44-47 (each counter can trigger an alarm state). It would have been obvious to one skilled in the art at the time of the invention to have N alarm units for the N ports. The motivation would be to indicate for each individual port that flow control is necessary.

Regarding claim 7, the empty buffer having a counting value less than a preset threshold value is missing from the prior art. It is disclosed in Joung, column 3, lines 43-46. Also, a specific one of said N port-packet counters having a counting value greater than a preset threshold value is missing from the prior art. It is disclosed in Joung, column 6, lines 44-47. It would have been obvious to one skilled in the art at the time of the invention to set thresholds for the counters. The motivation would be to define when flow control is necessary.

Regarding claim 8, the alarm units comprising N comparators and N signal generators is missing from the prior art. It is disclosed in Joung, column 6, lines 47-51 (each port can have different threshold values, implying that each port has a separate comparator) and lines 61-65 (each comparator would generate a signal to send to the packet memory interface to indicate the threshold had been reached). It would have been obvious to one skilled in the art at the time of the invention to have N comparators and N signal generators. The motivation would be to be able to trigger flow control for each of the N ports.

Regarding claim 9, each of N comparators sending a triggering message corresponding to the threshold state to respective one of N signal generators after the alarm unit alarms is missing from the prior art. It is disclosed in Joung, column 6, lines 61-65 (the combination of the each individual input port's counter, comparator, and the packet memory interface can be viewed as a signal generating unit that the comparator sends a triggering message to). It would have been obvious to one skilled in the art at the time of the invention to have the N comparators send triggering messages to the N signal generators when the alarm goes off. The motivation would be to send a triggering message when flow control is necessary.

Regarding claim 10, the respective one of said N signal generators being triggered by said triggering message for sending a flow control signal to all said N ports except said specific port is missing from the prior art. It is disclosed in Joung, figure 6, element 308 (the pause frame goes to the other ports). It would have been obvious to one skilled in the art at the time of the invention to send a flow control signal to all N other ports. The motivation would be to make them stop sending packets to the congested output port.

Regarding claim 11, the N ports being output/input ports to be outputted/inputted said data packets through said N ports is missing from the prior art. It is disclosed in Joung, figures 4 and 6 (upstream is output, downstream is input). It would have been obvious to one skilled in the art at the time of the invention to have the N ports be input/output ports. The motivation would be to use the type of ports usually found in a switch.

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7. Claims 14-16 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erimli in view of Joung.

Regarding claim 14, N-port-packet counters for counting how many data packets in said buffer are intended to be sent to said specific port to control said flux is disclosed in column 12, lines 15-17 (in order to determine if the maximum number is reached, there must be a counter). Claim 14 further specifies counting how much space remains available in said buffer, which is missing from Erimli. This is disclosed in Joung, column 3, lines 30-43. It would have been obvious to one skilled in the art at the time of the invention to count the amount of space left in the buffer. The motivation would be to determine when the master buffer for the switch was full.

Regarding claim 15, adding 1 to one of N-port-packet counters corresponding to a specific port is disclosed column 12, lines 15-17 (in order to determine if the maximum number is reached, there must be a counter). Claim 15 further specifies deducting 1 from the empty buffer counter, which is missing from Erimli. This is disclosed in Joung, column 3, lines 38-40. It would have been obvious to one skilled in the art at the time of the invention to deduct 1 from the empty buffer counter. The motivation would be to keep a count of how much space was left in the buffer.

Regarding claim 16, Computing whether one of said port-packet-counters has a specific counting value greater than a specific threshold value preset therein is disclosed in Erimli, column 12, lines 15-17. Claim 16 further specifies computing whether said empty buffer counter has a counting value less than a threshold value preset therein, which is missing from Erimli. This is disclosed in Joung, column 3, lines

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43-46. It would have been obvious to one skilled in the art at the time of the invention to compute whether the empty buffer counter had reached its threshold. The motivation would be to see whether the buffer was full.

Regarding claim 25, upcounting one of N port-packet-counters counting how many said data packets in said buffer are intended to be sent to said specific port is disclosed in column 12, lines 15-17 (in order to determine if the maximum number is reached, there must be a counter that counts up). Claim 25 further discloses the flux in the computing means being down-counted by an empty buffer counter counting how much space is in the buffer, which is missing from Erimli. This is disclosed in column 3, lines 38-40 of Joung. It would have been obvious to one skilled in the art at the time of the invention to down-count an empty buffer counter. The motivation would be to have a measurement of how much space is left in the buffer.

Regarding claim 26, the empty buffer counter having a preset threshold denoting a minimum safety level for allowing data packets into the switch is missing from Erimli. It is disclosed in column 3, lines 43-46 of Joung. It would have been obvious to one skilled in the art at the time of the invention to have a threshold for the empty buffer counter. The motivation would be to determine when the buffer had no more space.

Regarding claim 27, the N port-packet-counters comprising a respective port threshold value denoting a maximum safety level for allowing of said data packets to be sent to a corresponding one of said N ports is disclosed in column 12, lines 15-17 of Erimli.

Regarding claim 28, the alarm state being established when one of said N port-packet-counters is greater than said respective port value is disclosed in column 12, lines 57-61. Claim 28 further discloses the alarming state being established when the empty buffer counter is less than the preset buffer threshold, which is missing from Erimli. This is disclosed in column 3, lines 43-46 of Joung. It would have been obvious to one skilled in the art at the time of the invention to have alarm state established when the empty buffer counter drops below the threshold. The motivation would be to alarm that action is necessary when the buffer is full.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia L Davis whose telephone number is (571) 272-3117. The examiner can normally be reached on 8:30 to 6, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read 'Huy D. Vu', with a long horizontal flourish extending to the right.

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600